Exhibit R-2, RDT&E Budget Item Justification: PB 2015 Air Force											Date: March 2014	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0305110F / *Satellite Control Network (SPACE)*							
COST ($ in Millions)	**Prior Years**	**FY 2013**	**FY 2014**	**FY 2015 Base**	**FY 2015 OCO #**	**FY 2015 Total**	**FY 2016**	**FY 2017**	**FY 2018**	**FY 2019**	**Cost To Complete**	**Total Cost**
Total Program Element	-	30.944	35.657	20.806	-	20.806	14.085	15.400	15.701	15.999	Continuing	Continuing
673276: *Satellite Control Network*	-	30.944	35.657	20.806	-	20.806	14.085	15.400	15.701	15.999	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

The FY 2015 OCO Request will be submitted at a later date.

A. Mission Description and Budget Item Justification

The Air Force Satellite Control Network (AFSCN) is a satellite ground terminal network comprised of two communication nodes and 15 antenna systems. The antennas are distributed around the globe at eight locations to ensure global coverage for 170 satellites in various orbits. The AFSC conducts an average of 450 satellite contacts per day supporting Positioning, Navigation and Timing (PNT); Intelligence, Surveillance and Reconnaissance (ISR); Missile Warning; Communications; Weather; Launch Vehicle Support; Research and Development (R&D) in support of Department of Defense (DoD), Intelligence Community (IC), and National Aeronautics and Space Administration (NASA) operations. While most of the 450 satellite contacts/day are routine command and control activities, the AFSCN is also used for satellite emergencies (e.g. tumbling satellite) because its high power antennas are often the only earthbound assets that can contact a non-responsive satellite to re-establish command & control. In FY13 alone, the AFSCN supported 10 space vehicle emergencies resulting in the preservation of $6B worth of satellites.

In addition to routine and emergency satellite operations C2, the AFSCN provides support to launch vehicle and early orbit operations, ensuring worldwide antennas receive telemetry as the rocket travels through the atmosphere and and transmit commands to a newly orbiting satellite to initiate early orbit checkout. Finally, the AFSCN provides Compatibility Testing (FCT) to eusuresatellites and rockets can communicate via the AFSCN before the satellite is launched.

These funds are used to develop next-generation tools to improve the AFSCN and ensure the capability is available to support DoD, Intelligence, and civil users through 2020.

MISSION PLANNING UPGRADE: the Air Force will complete the Electronic Scheduling and Dissemination (ESD) 3.0 program, enabling worldwide antenna system scheduling to support all 170 satellites. Satellite operators will be able to request contact time with their satellites via the shared AFSCN antennas and ESD 3.0 will de-conflict overlapping requests, create a schedule, and publish real-time to all users. FY15 funds support transition and operational turnover of ESD 3.0.

SATELLITE ANOMALY RECOVERY AND SUPPORT UPGRADE: The Air Force will complete development testing of the enhanced High Power Amplifier (eHPA) first article. The AFSCN is in jeopardy of losing the emergency high power satellite contact capability due to obsolete parts used in the legacy AFSCN system. The eHPA program will develop a new high power amplifier that resolves the obsolescence issue well into the 2020's.

UNIFIED S-BAND UPGRADE: The Air Force is adjusting the AFSCN for spectrum-sharing with industry and preparing to migrate away from the current L-Band uplink/ S-Band downlink spectrum to the Unified S-Band (USB) spectrum. RDT&E funds support a first article integration of USB into the AFSCN to begin supporting users

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that are migrating to USB. The first article will complete the development, integration, test, and demonstration of USB on the AFSCN as a pathfinder for contemplated, future, AFSCN USB modifications.

This effort is in Budget Activity 7, Operational System Development, because it supports a fielded system.

B. Program Change Summary ($ in Millions)	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total
Previous President's Budget	33.773	35.698	21.065	-	21.065
Current President's Budget	30.944	35.657	20.806	-	20.806
Total Adjustments	-2.829	-0.041	-0.259	-	-0.259
• Congressional General Reductions	-0.045	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-2.784	-0.041	-0.259	-	-0.259

Change Summary Explanation

PY Other Adjustment Row: Sequestration: -$2,784,000

C. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
Title: RTS Block Change (RBC)	1.391	5.143	2.272
Description: Continue RBC development to replace outdated, unique RTS equipment with standardized equipment and technology to reduce failures and enhance sustainability and provide FFRDC (Aerospace) support. ***FY 2013 Accomplishments:*** Completed systems engineering/integration and began testing the Transportable RBC. ***FY 2014 Plans:*** Begin development of the Enhanced High Power Amplifier (EHPA) project through preliminary design review. ***FY 2015 Plans:*** Continue Enhanced High Power Amplifier (EHPA) development through critical design review and initial developmental testing. Provides Program Management Administrative costs to execute the RBC upgrade effort.			
Title: Unified S-band (USB) uplink	-	9.066	6.088

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
Description: Develop First Article Demonstration of USB uplink transmitter to enable commanding of satellites using USB frequency in addition to the legacy L-band frequency uplink commanding and provide FFRDC (Aerospace) support. ***FY 2013 Accomplishments:*** Continued development begun with FY11 funding; refined design into detailed configuration-item level design. ***FY 2014 Plans:*** Complete Preliminary design and prepare for Critical Design Review. ***FY 2015 Plans:*** Complete Critical Design Review; complete hardware and software integration and installation; begin testing.			
Title: Systems Engineering ***Description:*** Provide test, Information Assurance (IA), requirements management, and system architecture support to the AFSCN and provide FFRDC (Aerospace) support. ***FY 2013 Accomplishments:*** Provided test, IA, and work package planning for RBC electronics core activities; resolved design deficiencies; performed RTS performance monitoring at RBC sites; continued future requirements development; updated AFSCN architecture roadmap. ***FY 2014 Plans:*** Provide test, IA, and work package planning for RBC electronics core activities; design RTS performance monitoring at RBC sites; continue future requirements development; update AFSCN architecture roadmap ***FY 2015 Plans:*** Provide test, IA, and work package planning for RBC electronics core activities; resolve design deficiencies; RTS performance monitoring at RBC sites; continue future requirements development; update AFSCN architecture roadmap.	3.614	3.785	2.975
Title: Electronic Scheduling and Dissemination System (ESD) 3.0 ***Description:*** Develop an upgrade for the aging, increasingly-unsustainable resource scheduling system needed to coordinate and manage satellite supports using the AFSCN antennas and provide FFRDC (Aerospace) support. ***FY 2013 Accomplishments:*** Completed additional software builds, installation and check-out ***FY 2014 Plans:***	25.939	17.663	9.471

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2013	FY 2014	FY 2015
Complete Segment Verification testing and complete final software builds ***FY 2015 Plans:*** Complete developmental and operational testing. Deliver ESD 3.0 to operations.			
Accomplishments/Planned Programs Subtotals	30.944	35.657	20.806

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2013	FY 2014	FY 2015 Base	FY 2015 OCO	FY 2015 Total	FY 2016	FY 2017	FY 2018	FY 2019	Cost To Complete	Total Cost
• OPAF: BA03: Line Item # 836760: *AF Satellite Control Network Space*	44.161	19.863	54.630	-	54.630	77.178	70.056	60.919	62.007	Continuing	Continuing

Remarks

Procures the mission critical electronics and telecommunications equipment to upgrade the aging AFSCN Range and Network Operations segments.

E. Acquisition Strategy

RDT&E efforts focus on completing upgrades as well as future architectures and studies to ensure the best use of investment funding. The SE&I contractor maintains the DoDAF architecture and requirements baseline for Government approval and may perform studies to determine Government options. Limited RDT&E will be applied to the CAMMO contract when sustaining engineering expertise is needed to finalize Government-approved architectures. FFRDC technical depth and breadth will be leveraged to ensure AFSCN modernization efforts are compatible with mission rules and do not pose a risk to safe and cost-effective satellite contacts.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

Exhibit R-4, RDT&E Schedule Profile: PB 2015 Air Force		Date: March 2014
Appropriation/Budget Activity 3600 / 7	**R-1 Program Element (Number/Name)** PE 0305110F / *Satellite Control Network (SPACE)*	**Project (Number/Name)** 673276 / *Satellite Control Network*